Regulation of Infrastructure Industries in emerging countries

vol. 17 I n°3 I 2015

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networkindustries
quarterly

contents

Regulation of Infrastructure Industries in emerging countries

Welcome to the Autumn 2015 issue of Network Industries Quarterly! This issue is dedicated to some of the best papers presented at the 4th Conference on the Regulation of Infrastructures, which was organized by the Florence School of Regulation in June 2015. Selected academics and practitioners have been invited to Florence to discuss the latest developments in the regulation of different network industries, namely transport, energy, telecoms and water distribution around the world. Both the Conference and this issue of the Network Industries Quarterly have a special focus on emerging countries. Hence, this issue follows the path started by the Spring issue of the NIQ and extends the scope of the regulatory analysis to the emerging countries.

The first article (Joe Tomain) brings a picture of the US and the historic transformation of the US energy policy. In particular, the paper focuses on the Clean Power Plan, which is merging energy and environmental regulation for the first time for the express purpose of combating climate change.

Ricardo Reis, Joaquim Sarmento and Joao Goncalves make an assessment of water utilities efficiency using the Portuguese case. This paper helps to better understand the water sector in Portugal and provides solid evidence that there is room the different models of concessions: PPP, state-owned companies or government run services.

The third article (Christian Jaag, Urs Trinkner, Jose Parra Moyano) focuses on the major challenges and opportunities for postal service providers. It analyses the specific regulatory context in which postal strategies are derived, links it to the behavior and performance of incumbent operators, and compares the performance of these public operators deriving generic strategies of proven success.

In the fourth article, Edson Gonçalves and Patrícia Sampaio present the railway privatization process currently undertaken in Brazil. The Brazilian situation is very peculiar as every region has developed its railway system independently. Also, at present technical differences basically prevent competition and open access. Furthermore, the weak position of the national regulatory agency as well as the unique role of Valec (state owned company) make this case very interesting and highly debated.

The fifth article (Riham Ahmed Ezzat, Carlo Cambini, Carine Staropoli) looks at 17 Middle East North African (MENA) Countries along a period of 16 years (1995-2010), enquiring whether regulatory reform sequences matter for telecom sectors performances. This paper was awarded as best paper at the Conference.

We hope that you find these contributions interesting and we are looking forward to the next edition of the Conference on the Regulation of Infrastructures in June 2016!

dossier

Network Industries Quarterly | Published four times a year, contains information about postal, telecommunications, energy, water, transportation and network industries in general. It provides original analysis, information and opinions on current issues. The editor establishes caps, headings, sub-headings, introductory abstract and inserts in articles. He also edits the articles. Opinions are the sole responsibility of the author(s).

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ISSN 1662-6176 Published in Switzerland

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Clean Power and the Democratization of Energy in the US

Joseph P. Tomain*

Abstract - United States energy policy is undergoing an historic transformation. For the first time, the federal government, through what is known as the Clean Power Plan, is merging energy and environmental regulation for the express purpose of combating climate change.

The US electric industry is currently facing two substantial challenges. First, the transmission system is in disrepair and in need of multi-trillion dollar investments and must evolve into the promised smart grid. Second, the generation segment is now being called to task for its carbon emissions and may be subject to historically significant federal regulations intended to address climate change, which is addressed in this paper.

In June 2014, the United States Environmental Protection Agency (EPA) issued a proposed rule to curb carbon dioxide emissions from existing generating units (EGUs) known as the Clean Power Plan (CPP). While the final rule is expected August 2015[1], compliance is not expected to begin until 2016 at the earliest and may be extended, for multi-state plans, to 2018.

The CPP is a watershed proposal because it begins to align energy and environmental regulation at the national level. Historically, energy and the environment have been regulated by separate agencies and driven by separate regulatory goals. While several individual states have been more aggressive in addressing climate change, until this rule the federal government has failed to address climate change to any significant degree. Unsurprisingly, those regulations are subject to legal challenge and the final outcome of whether or not those rules satisfy legal requirements will not be known for years.

1. The Clean Power Plan and Future US Energy Policy

The best way to integrate energy and the environment is through climate change regulation. In the US, efforts to adopt a national policy on climate change have remained largely unrealized, even as state and regional efforts have progressed. Sub-national activities on this front include a widespread, if uneven, adoption of renewable portfolio standards by over 37 states; regional and multi-state arrangements to curb carbon emissions; and individual state efforts, such as those in California, to regulate greenhouse gas emissions and those in New York to restructure the electricity sector. Nevertheless, federal action to link energy and the environment more closely is beginning to occur and instead of waiting for federal climate legislation, the Obama administration has chosen to act administratively.

The CPP is intended to use federal-state cooperation to develop state-based plans to reduce carbon emissions by 26% (below 2005 levels) by 2020 and by 30% by 2030. The EPA estimates that the total combined climate and health benefits range from $26 billion to $57 billion in 2020 and from $55 billion to $93 billion in 2030. These benefits include reduced risks from heat stroke, reduced heat-related deaths, and reduced particulate pollution, as well as the costs incident to a decrease in the intensity of extreme weather events. Further, the agency estimates that the health and climate benefits will outweigh the estimated annual cost of meeting the standards, which are projected to run from $7.3 billion to $8.8 billion in 2030.

From 2020 to 2029 each state must meet a certain annual average amount of pollution reduction during that period. After this interim period, states must then meet EPA's 2030 target for emission reductions, and continue to do so from that point onward. State goals will be tethered to EPA's calculation of the "best system of emissions reduction" (BSER).

The BSER will be calculated based upon the mix of the power resources in each state and the application of four "building blocks" to achieve reduction targets. The building blocks are: (1) increasing the efficiency of fossil fuel-fired power plants through heat-rate improvements, including retiring older, less efficient coal plants; (2) using lower emitting energy resources such as natural gas; (3) utilizing more zero or low-carbon energy sources such as renewable energy or nuclear power; and (4) using electricity more efficiently through, for example, demand-side

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[1] This article was submitted on July 19, 2015

management programs and more efficient transmission systems.

Building Block 1 seeks heat rate improvements by EGUs by a state average of 6%. By increasing the heat rate - that is, by adopting improvements that increase the efficiency with which an EGU converts fuel to electricity – carbon intensity can be reduced by increasing the heat rate through decreasing the amount of fuel needed to produce the same amount of electricity. These improvements can be realized through such measures as equipment upgrades and by further optimizing operational practices.

Building Block 2 aims to modify fleet composition and dispatch practices by encouraging EGUs that are carbon-heavy to switch to less carbon-intensive generation. The CPP encourages EGUs to stop using the existing practice of first dispatching least-cost, carbon-heavy (i.e. coal) resources to generate electricity. Much of this change may come from increased reliance on natural gas-fired units, and particularly natural gas combined cycle units. EGUs may also choose to dispatch larger amounts of solar and wind power.

Building Block 3 also promotes greater use of lower-carbon generation. In particular, Building Block 3 contemplates greater use of renewable generating capacity. Renewable electricity, including conventional hydropower, currently constitutes 12% of total US electricity generation. The CPP's suggested expansion of renewable resources should be aided by the fact that more than half of the states have developed renewable portfolio standards, which require utilities to sell a certain percentage of electricity from renewable resources.

The CPP also envisions nuclear power as a key part of this building block. Nuclear power can reduce carbon intensity either through building new nuclear units (five are currently under constructions) or maintaining existing units rather than retiring them. This preservation may include plant upgrades as well as operating license extensions.

Building Block 4 offers credit for increasing energy efficiency. By reducing demand for generation at the affected EGUs, emissions reductions will occur. Forty-seven states have established demand-side energy efficiency policies and, therefore, the CPP can increase their utilization.

States can proceed individually or in collaboration via multi-state or regional plans. State compliance will be accomplished through two general approaches: direct regulation of EGUs, known as inside the fence line regulation; and, beyond the fence line regulations that affect non-EGU power providers such as wind, solar, and energy efficiency firms. The CPP, thus, is directed not only at EGUs but at states' provision of electricity more broadly.

The electric industry has not embraced the CPP and has argued that such regulatory requirements are injurious for two basic reasons. First, it argues that as a result of the availability of non-utility electricity, particularly from distributed generation, that privately-don't electric utilities will soon be in the throes of a "death spiral." Second, the imposition of further regulations, particularly those addressing carbon emissions, threatens the reliability of the entire electric system.

Neither the death spiral nor the reliability argument is sound. The electric utility industry is not near entering a death spiral. At present, less than 2% of electricity is provided by non-utility distributed generation. Consequently, claims of financial exigency are overstated. Claims about reliability, likewise, are not based on solid evidence and are likewise overstated. Instead of retarding economic growth, the CPP presents opportunities for business and regulatory innovation as traditionally structured utilities reorient their business practices. More specifically, through ratemaking, regulators can encourage: (1) technological innovation; (2) investments in renewable resources and energy efficiency; and, (3) grid improvements and upgrades.

2. Merging Energy and the Environment

Two significant consequences follow from linking energy and the environment. First, a clean energy policy can be advanced. Second, the energy future is now linked to climate change. It can be argued, easily enough, that a clean energy future is valuable in and of itself. Nevertheless, aligning climate change and clean energy promises a better future.

Assume, then, that a merger of energy and environmental policy is a wise step to take. Assume further, that a clean energy future is not only promising, it is desirable. Those assumptions then raise two significant questions. First, what political strategies should be engaged to achieve this promising future? While the strategic political question is a necessary one, another political question precedes it: What new narrative does the merger between energy and the environment need to justify itself? If we can begin to describe that narrative, then it should lead us to the appropriate political strategies.

The essence of the argument is that a new energy/environmental politics is necessary and appropriate because

the traditional energy narrative is stale. The traditional narrative promoted the expansion of large-scale, centralized fossil fuel energy. Cheap, but dirty, fossil fuel energy has played a significant role in contributing to economic growth and to the political authority of the US for most of the 20th century. In the 21st century, however, traditional energy policy has proven to be seriously flawed precisely because of the unaccounted for social costs of fossil fuel energy.

Today, instead of centralized power, decentralized, smaller-scale, consumer friendly energy strategies are needed for the transition to a clean energy economy. More decentralized energy/environmental action is directly linked with democracy as political activities directly affect the localized an individual production and consumption of energy.

More democratic and decentralized energy/environmental action is a reality not only a possibility. By engaging in such activities such as 350.org and voluntary carbon action reduction groups, individual behavior is changing as energy consumers reorient their political lives from energy consumerism to democratic energy participation. In short, a prosumer society is developing. Proactive involvement with the energy/environmental complex at the local and individual levels is a significant change in thinking and acting about the future. Individual actions today do not count as short-term economic losses through reduced consumption or by paying the costs of environmental adaptation or mitigation, instead active participation is viewed as a gain in greater democracy and consumer control.

How, though, does a more democratic clean energy politics connect with democracy? The central democratic principle is to promote greater participation and voice in political and economic institutions. As such, a new, more democratic energy/environmental paradigm affects (1) the production and delivery of energy; (2) its consumption and control; (3) its regulation and enforcement; and, (4) its governance and legal institutions. In short, energy law, policy and decision-making move in two more democratic directions. First, they move from top to bottom. Under the guidance of the federal government, states and local governments, as well as consumers, will play an increasing role in combating climate change. Second, they move focus from central power production to decentralized consumption. Under the CPP, prosumers have a larger say in not only consumption but also in the production of energy.

A smarter, cleaner energy politics leads to smarter, cleaner energy/environmental technologies. Decentralized, small-scale, labor-intensive clean energy industries and activities offer a competitive advantage by stimulating jobs, innovations and investments. Further, energy decentralization enables states and local governments to serve as "policy laboratories" that engage in regulatory experimentation, which can promote efficiency gains through competition; develop best practices for the local use and distribution of energy; engage in public education through the accumulation and dissemination of local knowledge; enable localities to scale energy activities to the tasks most suitable to them; and, search for cooperative solutions with and among other layers of government.

Through all of these processes, citizen participation is heightened as citizens choose new political ends, in this case, an integrated energy/environmental future. Such is the democratic impulse. As distributed generation, decentralization and small-scale energy technologies expand, utilities will respond as consumers play a more participatory role in signaling to utilities their demand for energy and energy-related services as well as their ability to generate their own power and control their own consumption. Likewise, regulators will be called upon to better manage the energy system by balancing new consumer demands with new utility structures. In short, a new and more democratic regulatory framework will develop to support planning, coordination and innovation as a new politics takes hold.

References

1. Chupka, M. W. et al., 2008. Transforming America's Power Industry: The Investment Challenge 2010-2030. The Edison Foundation
2. Environmental Protection Agency, 2014. Carbon Pollution Emission Guidelines for Existing Stationary Sources: Electric Utility Generating Units, 79 FED. REG. 34830
3. Graffy, E & Kihm, S., 2014. Does Disruptive Competition Mean a Death Spiral for Electric Utilities?, 35 ENERGY L. J. 1
4. In Re: Murray Energy Corp.. Docket No. 14-1151 (D.C. Cir. June 9, 2015)
5. Database of State Incentives for Renewables and Efficiency, Renewable Portfolio Standard Policies (Mar. 2015)
6. North American Reliability Corporation, 2015. Potential Reliability Impacts of EPA's Proposed Clean Power Plan Phase I
7. Pursley, G. B. & Wiseman, H. J., 2011. Local Energy, 60 EMORY L. J. 877, 897
8. Raskin, D. B., 2013. The Regulatory Challenge of Distributed Generation, 4 HARV. BUS. L. REV. ONLINE 33-51 (2013)
9. Tierney, S. et al., 2015. Electric System Reliability and EPS's Clean Power Plan: Tools and Practices

A brief overview on regulation and performance in the Portuguese water sector

Ricardo Ferreira Reis* - João Gonçalo Ribeiro* - Joaquim Miranda Sarmento**

Abstract - We analyse the performance in the water industry in Portugal, using a set of indicators on financial and quality of service. We regress these on a set of explanatory variables. We find evidence that the PPPs in Portugal provide better services than the state-owned providers, but find no evidence of better financial shape. This paper helps to better understand the water sector in Portugal and provides solid evidence that there is room for the different possible models of concessions: PPP, state-owned companies or government run services.

1. Introduction

This article builds on the Portuguese[1] experience in the water sector. We analyse the financial efficiency, the quality of the service and overall performance of the Portuguese water distribution system and how variables such as impact of private management, scale, productivity and contracts affect performance.

The Portuguese setting is particularly interesting for three sets of reasons: first, it is the result of an extremely fast development to fulfil EU requirements. It has compensated in just a decade and a half the lack of infrastructure in water supply, waste water and waste treatment existing before. Despite some concerns, this fast pace was achieved with a reasonable efficiency in the services. Second, the setting is very neatly organized around a centralized regulator and central overreaching water company ("Aguas de Portugal") with regional wholesalers of water services and local retailers. Third, it allows for the existence of numerous settings, with corporations that may be public or private, national or international, vertically integrated or horizontally integrated. At the end, in a very controlled setting, we can observe a myriad of cases that conveniently allow the type of statistical analysis we are developing here.

2. The Portuguese water utilities sector

The water sector in Portugal comprises three different subsectors: the distribution of water to the public; the wastewater system; and the waste management services. All three sub-sectors have a chain of processes. These processes are divided into the "upstream" wholesaler of regional water services (eg: abstraction of water for further consumption from a watershed that will serve many municipalities) and the "downstream" local stages (eg: distribution of water to households within a city).

In Portugal there are three models of management of companies in the water sector: 1) Direct state management, which means that local or "inter-municipal" governmental providers take responsibility for the service; 2) Delegation, where a state-owned company provides the services; 3) Concession, which allows for the entrance of private companies. These companies can be state-owned companies or privately owned (private majority or minority shareholders). When the company is mostly privately owned, the concession is considered a Public-Private Partnership (PPP). Concessions can be municipal or multi-municipal.

In order to comply with EU infrastructure requirements and to take advantage of European (co-)funding opportunities, Portugal engaged in a frantic expansion of the water system infrastructures from the start of the century. In 2000 an objective was established: over a period of 6 years the infrastructure was bound to meet the top European standards assuring a level of water supply service to 95% of the population and of wastewater infrastructure to 90% of the population. These goals were reached and surpassed for urban populations, but rural areas are still lagging behind As pointed out by Cruz & Marques (2012), the challenge in the water sector has passed from extending coverage to upgrading efficiency and performance.

This expansion has allowed the country to assure water supply to almost all its population, especially in urban areas. Also, water quality has improved significantly. In 1993 only 50% of the domestic water supplied was considered safe, whereas within less than a generation, in 2011, that number climbed to 98% (RASAARP 2012). Naturally this rapid growth was only possible thanks to a massive investment. However, such an expansion has raised questions on the quality and efficiency in the use of public funding and resources.

Similar expansion was experienced in the solid waste management with even larger success in implementation

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1 We restrict the analysis to Continental Portugal.

and also some overall success in quality and efficiency. This way, the country rapidly reached the highest levels of quality when it comes to landfills and waste treatment; this is also the case for wastewater management, here with a lower success rates, but still with significant improvement.

3. Methodology and Data

We divided efficiency into financial and quality efficiency. The financial efficiency measures the financial performance of each company. The quality efficiency addresses the quality and sustainability of the service provided to users by each company. These two scores were computed independently on a yearly basis, from 2007 to 2012, from the water sector regulator's reports (ERSAR, 2008 to 2013). Table 1 identifies the indicators used for each type of efficiency. Each indicator was measured in different units and scales, but then a ranking order with a score from 1 to 5 (5 being the highest score) was used to harmonize and aggregate the information. The individual indicators were aggregated into a weighted average grade of 1 to 5 in terms of financial and quality efficiency grades, using the methodology used by Reis (2009) and Ribeiro (2015).

Table 1 – Financial and quality indicators

Financial performance	
Indicator	Formula
Equity ratio	Equity / Assets
Exploration margin	Operational profit / Revenues
Permanent capital coverage	Operational profit / Permanent capital
Capitalization	Equity / Share capital
ACP	Average collection period
% Owned by AdP on the concession	
Quality performance	
Service availability	
Occurence of failures on the network	
Water safe for consumption	
Coverage ratio	
Unbilled water	
Reabilitation of distribution networks	
Suitability of human resources	
Respect of legal parameters	

Source: Ribeiro (2015)

In order to address how efficiency is determined by some variables, we used an OLS (Ordinary Least Squares), with the dependent variable being the global efficiency in the first test, the financial efficiency in the second test, and the quality efficiency in the third test.

$$Yi = \beta_0 + \beta_1\, concyear + \beta_2\, concper + \beta_3\, contractchanges + \beta_4\, public + \beta_5\, land + \beta_6\, houses + \beta_7\, workers + \beta_8\, EPAL + \mu i \quad (1)$$

where:

- Yi is the explained performance variable and can be the financial efficiency grade (FinancialPerfi) or the quality efficiency grade (ServiceQuali) efficiency grade. All 3 grades are defined in a range between 1 and 5.
- concyear is the year that the concession was awarded.
- concper is the number of year of the concession.
- contractchanges is the number of changes in the contract, in terms of contract extensions.
- public is a dummy variable capturing whether the project is managed by private companies or state owned entities. The dummy has the value of 1, if the company/services/concessionaire is held in majority by state owned companies or entities.
- land is defined as the area served by the company, measured in square kilometres.
- houses is a variable that considers the number (in thousand) of homes in the area of the concession. That will allow us to consider the potential impact of population density.
- workers measures the number of workers in each company. This variable is a proxy for the size of the company.
- EPAL is a dummy variable referring to the upstream water supply company in Lisbon, named EPAL. This entirely state-owned company has specificities, but serves a significant portion of the population of the country. We did not want to exclude this company from the sample, but we think that this special case deserves to be in a category of itself.

4. Results

Results from this work are provided for the entire sample as for the upstream and downstream in Table 2.

For the entire sample (tests 1 and 2), we found that earlier concessions are more efficient than those awarded later. This is due to the fact that the earlier concessions were the most consensual and needed, providing efficiency gains. It can also be the case of a certain degree of survival bias (the companies that are less efficient were terminated and re-concessioned). Indeed the political process was sorted out easier in the more consensual cases, namely those cases requiring less investment were more likely to suc-

ceed. On the other hand, it is also likely that the earlier concessions were also the ones that required less infrastructure investment and were less costly to do.

We also found evidence that serving larger territories hurts efficiency, as the level of infrastructures required to cover wider surfaces is higher. Also, servicing more households tends to reduce quality efficiency. The economies of scale of servicing larger populations lead to higher levels of service, but not to financial efficiency.

These results also show that larger companies are more profitable than smaller companies. To our surprise this effect is not relevant in the quality of service. More workers do not imply any improvement in the service provided, which stresses that there is a reduced human intervention in the quality of the services rendered.

The control dummy we introduced for the Lisbon water supplier proves itself significant (5% for financial and quality performance, reinforced to 1% on overall performance) on all regressions with the expected negative sign, confirming our hypothesis that the particularities of EPAL hurt its performance financially and in terms of quality of service.

The introduction of year dummies does not change the previous conclusions on the variables. Year effects do not affect performance in the financial grades, but they do have an impact on the quality performance. As the regulator attests, the quality of service has been improving throughout the recent years and that is noticeable by the positive significant coefficients on the year dummies.

For the upstream companies the results in tests 3 and 4 generally confirm the results for the joint regressions, repeating most of the results, except that now EPAL only underperforms the upstream peers in quality of service, and no longer in financial terms. Another difference is that we lose the significance on the result of the private companies outperforming in quality the state owned ones. Probably the most surprising result in this subsample is the fact that the concession duration becomes significant and negatively affects the financial performance. This is somewhat of a surprise and contradicts our previous hypothesis, as we expected the duration of the concessions to be longer in more consensual contracts. It seems however that in the case of the upstream companies an alternative explanation holds. Possibly the more troublesome concessions are given more time to recover.

When it comes to the downstream companies (test 5 to 6), apart from the significance on the age of the concessions, again confirming that older contracts tend to be more efficient, everything else is not significant.

5. **Conclusions**

Using the particular setting of the Portuguese water industry, we find evidence that hints at the fact that concessions are a delicate political issue, and that the governmental entities are not always the best solution for providing a service of quality to the populations.

The rapid development of this industry in Portugal lead to an ever-improving service in a sector that is very critical for environmental policy and for the general wellbeing of the population. The evidence that these services can be provided by private entities in ways that actually increase their quality is certainly an interesting contribution that likely deserves further analysis in other settings and other countries.

References

1. Cruz, C. & Marques, R, (2011) "Revisiting the Portuguese experience with Public-Private Partnerships", African Journal of Business Management Vol. 5 (11) pp. 4023-4032
2. ERSAR (2013) RASARP 2012, available at http://www.ersar.pt/website/ViewContent.aspx?FinalPath=Not%C3%ADcias&Section=News&FolderPath=&Name=RASARP2012&SubFolderPath

Table 2 - Results

	All Sample		UpStream		DownStream	
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	FinancialPerf	ServiceQual	FinancialPerf	ServiceQual	FinancialPerf	ServiceQual
Concyear	-0.0378***	-0.04643***	-0.0358*	-0.0602***	-0.0367***	-0.0389***
	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)
Concper	-0.0065	0.00596	-0.0272***	0.0188*	0.0169*	-0.0078
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Contractchanges	0.0066	0.03335	0.1819	-0.1265	-0.1385	0.1502
	(0.07)	(0.07)	(0.12)	(0.12)	(0.09)	(0.1)
Public	-0.0438	-0.22958**	-0.1523	-0.1596	-0.1761	-0.25
	(0.11)	(0.11)	(0.18)	(0.19)	(0.35)	(0.36)
Land	-0.0001***	-0.00003*	-0.0001***	0.	-0.0001	0
	(0)	(0.00)	(0)	(0.00)	(0.00)	(0.00)
Houses	-0.00004	0.00065**	0.0002	0.001***	0.0012	-0.0054
	(0)	(0.00)	(0)	(0.00)	(0.00)	(0.00)
Workers	0.0022***	-0.00004	0.0014	-0.0011	0.002	0.0026
	(0)	(0.00)	(0)	(0.00)	(0.00)	(0.00)
EPAL	-1.2011**	-1.3928**	-0.3876	-1.6577**		
	(0.55)	(0.55)	(0.79)	(0.82)		
2008.Year	-0.0649	0.11269	-0.1113	0.1457	0.0269	0.0587
	(0.12)	(0.12)	(0.15)	(0.16)	(0.19)	(0.19)
2009.Year	-0.0617	0.24024**	-0.2295	0.3685**	0.1998	0.062
	(0.12)	(0.12)	(0.15)	(0.15)	(0.18)	(0.19)
2010.Year	0.009	0.27243**	-0.2257	0.4353***	0.3745	0.0407
	(0.12)	(0.12)	(0.15)	(0.16)	(0.18)	(0.19)
2011.Year	0.0463	0.44805***	-0.1056	0.5852***	0.2679**	0.2546
	(0.11)	(0.12)	(0.15)	(0.15)	(0.18)	(0.18)
Intercept	79.55***	95.26***	76.39**	122.34***	76.43***	80.69***
	(22.08)	(22.33)	(36.46)	(37.91)	(27.88)	(28.88)
Observations	280	280	158	158	122	122
R-squared	0.23	0.18	0.36	0.25	0.20	0.15

standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Regulation and postal strategies[1]

Christian Jaag*, Jose Parra Moyano*, Urs Trinkner*

Abstract - Increasing substitution of letter mail by electronic means of communication and increasing parcel volumes due to electronic commerce represent major challenges and opportunities for postal service providers. Incumbent postal operators (POs) have reacted and are reacting differently to them. Our analysis links the specific regulatory context in which postal strategies are derived to the behavior and performance of incumbent operators. Finally, it compares

1. Introduction

Electronic communications impact all of postal operators' businesses. Traditional letter mail can be substituted by various electronic means, whereas quality parcels services are of essence for online shops bypassing the traditional retail channels. There is a significant decrease in of letter mail volume. At the same time, most incumbent operators benefit from growing e-commerce and see their parcels volumes rising

These developments represent major challenges and opportunities for postal service providers. Incumbent postal operators (POs) have reacted and are reacting differently to those challenges.

In their letter mail business, actions have included cutting costs, e.g. by reorganizing processes throughout the value chain, applying increased automation, outsourcing of carriers, reducing real wages, increasing prices above inflation in particular for single piece mail, reducing service standards and/or universal service obligations (USO), improving services, for example intelligent mail or hybrid services, and leveraging the delivery network, for example by providing community and doorstep services or cross-selling third-party products.

To participate in growing e-commerce markets, incumbent POs have increasingly developed their parcels business. Amendments include improved end-to-end transit times, e.g. by better delivery times (Saturday delivery, Sunday delivery, evening delivery, selectable time slots) and faster delivery speed, and improved sender and recipient services (track & trace, collection at home, flexible delivery points, parcel lockers etc.). Many operators are also expanding toward logistics (all-in-one solutions, warehousing, etc.).

Similarly, POs have developed their post office networks into different directions. Many have replaced their traditional post offices by agencies where basic postal services are provided in third-party retail outlets, e.g. grocery stores. Other measures include outsourcing or franchising of post offices to third parties, and leveraging post offices and infrastructure to enter new markets, e.g. financial services, insurance services, or high value retailing.

Incumbent POs have chosen different combinations of these measures. Consequently, they are developing into different directions. For example, Poste Italiane has become a much diversified group with postal services accounting for less than 15 per cent of revenues, whereas USPS is constrained by statute to focus on its traditional mail and parcels business. As a result, postal incumbents strongly differ in the composition of their revenue distributions.

2. Performance

Figure 1 illustrates weighted EBIT of selected incumbent operators and the change in total revenue from 2006 to 2012 in a scatter plot. The size of the circles indicates absolute revenue, e.g. USPS and Deutsche Post achieve high revenues and therefore large circles. The colorization represents a classification based on the operators' current revenue mix: Yellow for an important role of letter mail, orange for parcels, brown for logistics, red for an emphasis on retail services, blue for financial services, green for information services and black for telecommunications services.

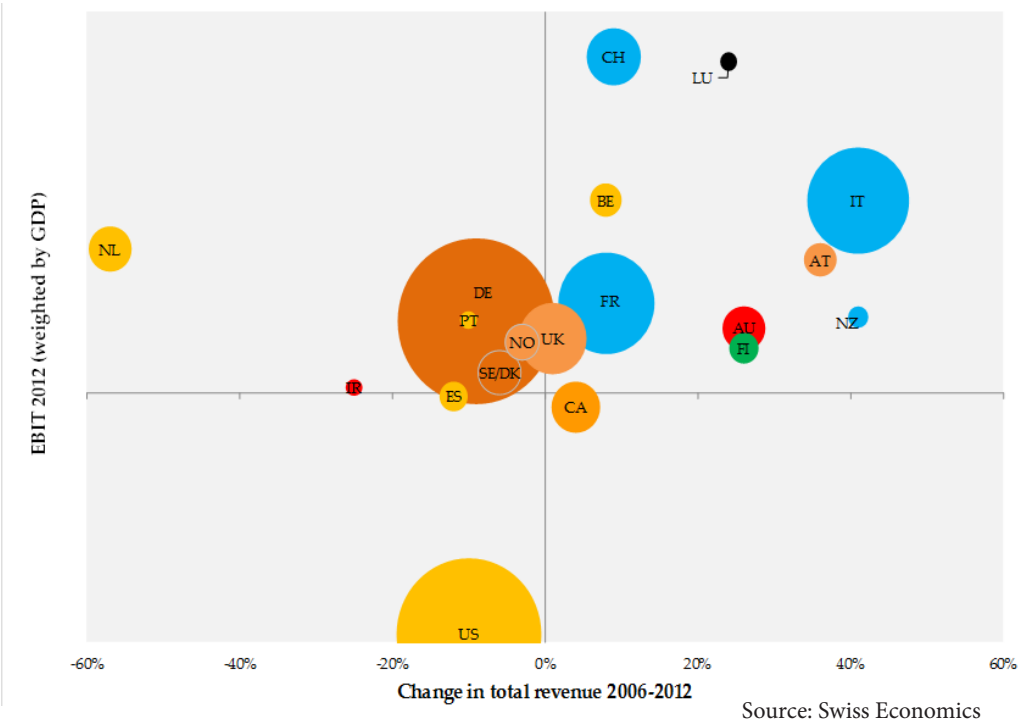
The figure is to be interpreted with caution, as there are many different factors influencing the apparent performance of POs. For example the large revenue decline of Post NL was primarily caused by the divestment of TNT.

It may be concluded that the "blue" incumbent ope-

1 This paper is a short version of Jaag et al. (2015).

* Swiss Economics

Figure 1: Performance of selected incumbent operators



Source: Swiss Economics

rators, i.e. the ones that put particular emphasis on financial services, perform particularly well in terms of EBIT and revenue development. It would be false, however, to conclude that all POs should diversify into financial services and banking. Having already been active in financial transaction services in the past and disposing of the necessary infrastructures seem to be important prerequisites for successful business development in this domain.

In the first quadrant with negative EBIT and revenue development, there are two operators (USPS and Correos), both relying strongly on letter mail.

Generally, diversified postal incumbents appear to have developed better in relative terms. Examples of successful diversification strategies are for example Australia Post with its community retail services provided in post offices, New Zealand Post and Swiss Post with their banking services, and Poste Italiane with its success in selling life insurances. In these cases, diversification was based on leveraging existing infrastructure, competences and reputation. Strategies that focus on a particular market, e.g. KEP markets or logistics, succeed in compensating losses in the letter market. Overall margins, however, appear to be more modest.

3. Generic strategies

Postal operators' strategies are path-dependent and must comply with the country-specific regulatory framework. The strategies result in specific types of innovation and are reflected in business performance. Strategy, innovation and performance in turn can influence regulation. Whereas regulation strategies aim at influencing regulation directly, innovations may lead to changes of regulations for example based on new possibilities to fulfill the USO. Performance on the other hand may limit or extend the scope of fundable USO.

The dependency on the legal and regulatory environment of the successful strategies and the posts' ability to adopt them results from a number of interaction channels: First, the state ownership and the associated principle of legality determines the legal boundaries of a PO's scope of business. Second, the scope of the (past and current) USO determines the USP's cost structure and its assets for new business development. Third, the status of market opening determines the degree of (potential) competition and the USP's ability to finance its obligation with own funds (see for example Dietl et al., 2005). Fourth, the past definition of the USO and the performance of the USP determine its reputation and thereby its potential to leverage it into new business fields where trust is key (see Dietl and Jaag, 2011). Fifth, the scope of the USO determines the viability of (the USP's and its competitors') postal and financial services due to the strategic deterrence effect (see Jaag, 2011). Sixth, the scope of the USO with associated mandatory services also determines whether new services must be economically viable on their own or whether they may benefit from induced cost savings of substituted traditional processes (e.g. physical delivery).

Table 1: Post office network regulations and development

	Regulation	Strategy	Innovation	Performance
AU	Maintain 4000 retail outlets, including 2500 in rural/remote areas	Bring value to post office network by providing 3rd party services, e.g. banks	IT platform facilitating high value retailing with 3rd parties	Strong growth and profitable post office network
NZ	Provide 880 retail outlets, thereof 240 post offices	Bring value to remaining post offices	Launch of KiwiBank	Strong growth and profitability of bank
UK	Full market opening, structural separation of post office network	Compete for letters and parcels	Process innovations	Limited growth and EBIT margin
CH	Minimum accessibility, financial transactions in USO	Develop all business divisions and in particular PostFinance	Process and product innovations	Solid growth, strong development of PostFinance
US	Post office requirements, no diversification allowed	Develop mail and parcels business	Process innovations	Substantially negative margins
IT	Full market opening, post offices for 96% of municipalities+	Diversify	Launch of BancoPosta, PosteAssicure, PosteVita, and more	Strong growth of new services

Table 1 illustrates the interdependencies based on a selection of case studies with emphasis on regulations concerning the post office network. The figure reveals substantial differences in the evolution of post office networks that can be explained by different initial regulations.

The interdependencies also determine the optimal type of innovation: the more flexible a post is in terms of its infrastructures, the more attractive investment in process innovation is. Conversely, e.g. if the USO is strongly input-oriented, product innovation aiming to utilize these assets is more attractive.

One size of a corporate strategy does not fit all. This also implies that there are things which POs can learn from each other in terms of new business development, but only to the extent that their regulatory frameworks support similar strategic choices.

4. Conclusion

Many POs have significantly and successfully moved away from their traditional core businesses. In particular, operators with banking services have been able to achieve growth and above average margins. However, the optimal business strategies are not the same for all POs since they are often only second best, given the specific regulatory framework. Hence, regulation is relevant for understanding business strategies and the great policy challenge consists in accomplishing the optimal co-evolution of regulation and its institutions with market developments.

With binding regulations in place (e.g. USO prescribing infrastructures or processes), these regulations should be complemented with legal and regulatory support the following dimensions: First, there needs to be a legal foundation for diversification into new business to better utilize the necessary infrastructures or processes. Second, regulated services must be able to be substituted over time (i.e. discontinued) if there is an innovative alternative in place. Third, any cross-subsidization of existing or new services should be limited in order to allow new services to compete on a level playing field.

As an example, regulations that prescribe a minimum number of Post offices need to go along with a corresponding legality and ability to diversify to bring value into the existing post office network.

References

1. Dietl Helmut and Christian Jaag (2011). Postal and Regulatory Reform in Intermodal Competition, in: The Future is in the Post Vol. 2: Perspectives on Transformation in the Postal Industry, K. Sund and D. Osborn (eds.), Faringdon: Libri, 49-56.
2. Dietl Helmut, Urs Trinkner and Reto Bleisch (2005). Liberalization and regulation of the Swiss letter market, in: Regulatory and Economic Challenges in the Postal and Delivery Sector, Crew, M A; Kleindorfer, P R. (eds.), Boston, Mass., 53-72.
3. Jaag Christian (2011). Entry Deterrence and the Calculation of the Net Cost of Universal Service

Obligations, Review of Network Economics 10(1).

4. Jaag Christian, Jose Parra Moyano and Urs Trinkner (2016). Postal Strategies in a Digital Age, paper presented at the 23rd Conference on Postal and Delivery Economics, Swiss Economics Working Paper 0051.

Regulatory reform in the Brazilian railway sector – a preliminary assesment

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Abstract - In this paper we analyze the impact of a reform in Brazilian railway regulatory framework proposed in 2012. According to our results incumbent firms may lose value and the state may experience increasing fiscal costs.

1. Introduction

The Brazilian economy is greatly dependent on primary commodities, mainly mineral and agricultural. These goods are also prevalent in terms of international trade for the country (Sampaio & Daychoum, 2015). Most of these commodities are produced in the rural side of the country. Hence, the need to transport it for long distances to ports located on the Atlantic coast renders freight a key cost component in the country's competitiveness.

However, the Brazilian railroad system is still in its infancy in terms of the extension of the network and transportation capacity. This configuration is partially the result of public policies adopted in the second half of the last century that favored road transportation. Considering that several findings in the economic literature point to efficiency gains of rails, Brazil nowadays faces a major challenge due to its unbalanced transportation infrastructure matrix.

At first, the Brazilian government attempted to tackle this problem through a state-investor model launched in the 1980s (World Bank, 2007). Then, a privatization program followed in the 1990s. The relatively poor performance of such reforms motivated the government to reform the regulatory framework from a vertically integrated framework to a totally unbundled system.

In 2012 the federal government launched the National Integration Logistics Program (PIL). Among other goals, the Program aimed to foster investments in the railway system. The basic changes consist of unbundling infrastructure and service provision, introducing an Independent Railway Operators and a new role for a state-owned company, VALEC. According to the proposal the company would be required to purchase upfront all transportation capacity from infrastructure concessionaires, reselling it it in the market through public auctions (Pinheiro, 2014).

Several discussions and criticisms followed the proposal, leading to a temporary hault. Additonally, severe fiscal constraints contributed to postpone the implementation of the 2012 proposal. However, since not even a single new railway was auctioned between 2012 and 2015, the discussions and challenges still remain; that is, what is the proper model for Brazil to induce investments and improved performance in the country´s railway system? This discussion is timely since in 2015 the Brazilian government launched the second stage of its logistics program – PIL 2.

The purpose of this paper is to discuss the potential implications of the proposed regulatory changes assessing its effects on a firm holding a concession. In order to achieve the stated goals, the article is structured as follows. First, we present the basic economic principles regarding regulation of railways. Then we discuss the current Brazilian regulatory framework and the changes proposed in 2012, which have not been implemented so far. Next, we present our case study that we based on different regulatory scenarios and their possible impacts on a concessionaire. Finally, we comment some initial findings and ideas for further research.

2. Regulatory Framework

2.1 Regulation of rail system - the basics

The rail system is a natural monopoly organized in a mate-

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rial and continual network. Sectors with this structure are characterized by high fixed and sunk costs, with a technology exhibiting large economies of scale and scope, as well as network externalities. Such circumstances would, in principle, undermine competition. Hence, rail transportation would be a vertically-integrated market.

To overcome such issues, sector regulation may promote competition through unbundling schemes, which can be implemented by three alternative arrangements: (i) accounting separation, adopting different accounts to different activities within the same company in order to secure transparency and especially aiming at preventing cross-subsidies; (ii) legal unbundling, which forbids the same legal entity to be in charge of different segments of the value chain; and (iii) corporate structural unbundling, which prohibits an economic group (either through one or different companies) to perform different economic activities in the same sector.

A decision towards unbundling must consider a number of variables, which may also differ among distinct utilities. Shall the owner of the cargo be allowed to hold stakes in an infrastructure concessionaire? Shall the owner of the cargo be entitled to become service freight operator? Shall the infrastructure concessionaire be allowed to render services as a freight operator? Will the intended benefits of unbundling and competition in the railway sector overcome the economies of scale of a vertically-integrated structure and the transaction costs that are typical of unbundled public utility industries?

Most of the answers to these questions depend significantly on variables such as the size of the market, the range of products being transported, risks allocation, safety of operations. Additionally, Laperouza & Finger (2009) stress the need to balance short-term and long-term policy goals, such as developing the network and charging tariffs that would grant a proper return to investments.

2.2 The 1990 model

In the '90s Brazil decided to grant concession in the already-existing railways and transportation services to privates through public procurement processes. The awarded concessions are vertically-integrated, including both infrasctructure and services. According to Venckovsky (2005), all the consortiums entitled to such concessions comprise a commodity producer. Regulation was initially established by a Presidential Decree and acts from the Ministry of Transportation. Only in 2001, after the privatization process took place, the National Terrestrial Transportation Agency (ANTT) was created as an independent administrative body within the federal Public Administration.

2.3 The "new" model

The Brazilian railway system is going through a period of change regarding its institutional design. The resumption of the debate regarding Brazilian railroads was driven by the national Logistics Investment Plan (PIL), which aims to reinforce the role of this modal as a relevant logistics solution. This would be achieved by expanding the network and lowering tariffs.

Three institutional players are in charge of the governance of the sector: the indepent regulatory body, ANTT; the Planning and Logistics Company (EPL), which provides services regarding to projects, studies and research to support the planning of logistics and transportation in the country; and VALEC - Engineering, Construction and Logistics S.A.. This last company was restructured several times in its history. Nowadays VALEC provides various types of services in the railway sector, such as managing railway infrastructure, operations' programming, industrial efforts' coordination, development of sectorial studies and of transportation systems.

The structural reform underlying the proposal of the 2012 PIL aimed at increasing investments in the railway infrastructure by means of competition. The program established a new concession model, requiring segregation of the sectoral activities; that is, separating infrastructure construction and maintenance from the activity of capacity management and from transportation service provision. It can be argued that this goal departs from the 1990 reform that resorted to privatization to modernize the already-existing railways.

The initial setting of the proposed model requires VALEC to anually purchase all the operational capacity of the railway infrastructure concessionaire reselling it through competitive bidding procedures to companies willing to provide freight services. The auctions would grant access to the infrastructure along the whole railway system. According to ANTT, the object of the new concession agreements would comprise construction, operation, maintenance, monitoring and management of infrastructure. However services' activities and trains maintenance would be performed by the Independent Rail Operators (OFIs). OFIs are legal entities authorized by ANTT to provide rail transportation services. Hence under the proposed framework open access would be granted to the rail network.

According to the proposal, VALEC would manage the grid capacity, purchasing it upfront from infrastructure concessionaires. The subsequent allocation of this capacity is to be held through auctions to: (i) users willing to carry their own cargo; (ii) independent rail operators (OFI); and (iii) vertically-integrated railway concessionaires - the same ones privatized in the 1990s. Therefore, VALEC would be in charge of an organized market to match providers of

rail infrastructure and those in need of transport services. Instead of interacting directly, transactions among these counterparts would be mediated by VALEC – the vendors selling their full capacity and the users purchasing capacity from Valec.

Since the beginning of 2015, however, this new framework has been loosing support even at the government level. Severe fiscal constraints currently faced by Brazil coupled with preliminary analysis and investigations held by the Federal Audit Court (TCU) and the Ministery of Finance point to a potential government failure that may result from the new role to be assumed by VALEC. Additionally, it seems that such new unique regulatory model may be plagued by technical flaws. It has been also undermined by the lack of public scrutinity and regulatory oversight.

In this context, the following section presents a case study assessing the impact of the proposed reform in an incumbent firm operating in the railway sector in Brazil.

3. The ALL Case Study

In order to assess the potential impact of the proposed reform in an incumbent firm, we present the results of an exercise that calculates the present value (PV) of (i) a railway facility belonging to a real concessionaire today (Scenario 1); (ii) the effect of turning this firm into an infrastructure provider for VALEC while remaining an operator through the same economic group, (Scenario 2); or (iii) in case the regulatory framework mandates full open access without the intermediation of VALEC to induce competition in the railway (Scenario 3).

The selected company for the analysis is América Latina Logística (ALL), the largest company in the Brazilian railway sector that is publicly traded. The model considers the method of discounted cash flow. Also the assessment is restricted to railway networks directly operated by ALL.

3.1 Main results

Considering the role of VALEC as the sole capacity buyer, the value estimated for the concession is 42% smaller than the scenario where the firm continues to operate vertically integrated. Hence if regulation changes towards unbundling and with VALEC operating as an intermediary, the incumbent firm would be seriously impaired.

The entry of a new competitor would have a higher impact on the concession's PV when compared to scenario 2 (VALEC). For some scenarios, the best decision for the firm is to abandon the concession. This is the case whenever a very large competitor enters the market reaching a share at least as high as 50%. The resulting price war leads to a price drop of 35%. Also, in the event of growth lower than expected, a 40% fall in price would render the concession economically inviable. It is worth noting that this is a very likely scenario.

4. Concluding Remarks and Further Research

We conclude that the reform in the Brazilian Railway regulation proposed in 2012 may lead to a decrease in an incumbent firm`s value. It may also disincentivize established entrepreneurs and/or newcomers when compared to vertically-integrated schemes. For some specific scenarios, the change may be beneficial to the firm. However, such scenarios are potentially associated to higher costs to VALEC and, hence, to the Brazilian government.

Even though the model launched in 2012 is currently loosing support, the main questions underlying its initial conception remain: is the proposed unbundling scheme likely to foster investments in the railway system leading to lower logistics costs? Would the current vertically-integrated model coupled with open access rules lead to improved performance in the sector? Can a scheme under which the government, through a State-owned company, acts as an intermediary between capacity owners and transportation service companies be successful in mitigating investors' risks and improving the use of railways as a means to cargo transportation? These are the questions we are willing to answer with a broader research agenda regarding Brazilian railway regulation, including some extensions in the financial model to better introduce risk-sharing mechanisms.

References

1. Laperrouza, M; Finger, M. Regulating Europe's single market: Integrating performance and governance. Centre for European Policy Studies. Brussels, 2009.
2. Pinheiro, Armando Castelar. A nova reforma regulatória do setor ferroviário. In: PINHEIRO, Armando Castelar; FRISCHTAK, Cláudio Roberto. Gargalos e soluções na infraestrutura de transportes. Rio de Janeiro: Editora FGV, 2014.
3. Sampaio, P. & Daychoum, M. Regulatory Reform in the Brazilian Railway Sector and its Potential Efects. Draft Paper, Law & Society Annual Conference, 2105
4. Vencovski, Vitor Pires. Sistema ferroviário pós-privatização. Implicações para a organização e o uso do território brasileiro. Anais do X Encontro de Geógrafos da América Latina. Universidade de São Paulo, 2005. pp. 1655 – 16170.
5. World Bank. How to Revitalize Infrastructure Investments in Brazil - Public Policies for Better Private Participation. Washington D.C.: World Bank, 2007.

The Impact of Reforms Sequencing on the telecom sector performance: Evidence from MENA countries

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Middle East and North Africa (MENA) countries face the medium term challenges of creating employment opportunities for a rapidly growing young population, serving local markets and exports needs. The liberalization of the telecom sector contributes largely to the economic growth through the Information and Communication Technology (ICT) development and diffusion in the economy. With increased mobile competition in MENA, mobile revenues have contributed to economic growth, job creation, greater investment and integration in the global economy (Hakim and Neaime, 2014)[1]. In practice, telecom reforms consist of three main features: the introduction of competition where possible, the privatization of State-Owned Enterprises (SOEs) and finally the creation of new regulatory mechanisms and institutions notably an Independent Regulatory Agency (IRA).

A crucial question for policy makers is what should be the optimal sequence of the reforms considering that privatization, liberalization and the creation of an IRA might occur simultaneously or sequentially. This paper deals more precisely with the following question: should a country create an IRA before the privatization of the incumbent operator and/ or the introduction of market competition, or is it better to liberalize and privatize before creating an IRA, as it has been done typically in some EU countries, like Germany (Glachant et al., 2008)[2]. Up to now, no single way to proceed has emerged; countries have followed quite heterogeneous and changing policies regarding the sequence. Still, for most MENA countries as for the other countries, liberalization is typically done in two steps. First step consists of the enactment of a telecom law and the establishment of an independent regulatory authority. In the second step, dependent on the success of the first one, the telecom authority starts to liberalize the telecom market through restructuring of the incumbent operator and the promotion of entry of new investors. But as we will see, that is not always the case; specifically, in the case of MENA countries, while the law reforming the telecom sector has been adopted by, in practice, the powers delegated to the IRA, and the number of new entrants does not fit with the standard approach adopted in EU.

Intuitively, the reforms' sequences should have an impact on the behaviors of both public and private actors and consequently affect the performance of the industry. Typically, an IRA is supposed to create the conditions for new entrants to have a reasonable expectation of obtaining a return for their investments and the insurance not to be expropriated. As argued by Elena et al. (2013)[3], however, after MENA political transitions following the Arab Spring of 2011, "the absence of significant economic reforms, combined with persistent political and macroeconomic instability, is likely to keep investment and growth below potential in developing MENA, not only in the short run but in coming years, unless there is a break with past practices."

1. Overview of MENA telecom sector

The reforms process in MENA countries remains far from complete in spite of international pressures from the IMF, WTO or the WB to implement these reforms. Market liberalization in telecom sector has been slower in MENA countries than elsewhere in the developing world. In terms of entry of new operators, as of 2010, every MENA country has at least two mobile operators; however, this is not the case in the fixed-line market which is however a key aspect for the liberalization. Although fixed-line markets are competitive in Bahrain, Jordan, Morocco, Oman, Saudi Arabia, Sudan and United Arab Emirates, some countries still have a monopolist in their fixed-line services as Algeria, Djibouti, Egypt, Kuwait, Lebanon, Libya, Qatar, Syria, Tunisia and Yemen. Moreover, the monopolist incumbent operator remains a state-owned operator in Algeria, Djibouti, Kuwait, Lebanon, Libya, Syria and Yemen which reinforces inertia and rigidity.

This article draws from the paper Ahmed Ezzat, R., Cambini, C. and Staropoli, C. (2015). Do reforms sequences matter for telecom sector performance? Evidence from MENA countries that receives the Best paper award at the 4th Florence Conference on the Regulation of Infrastructures by Florence School of Regulation (Florence – Italy – 2015).

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However, liberalization and privatization in MENA region should not be taken for granted. For instance, Algeria has repeatedly postponed the privatization of the incumbent operator it committed to in the Telecommunications Sector Policy Statement in 2000[1]. Many countries like Lebanon still have a monopolist state-owned incumbent operator. Although the restructuring and privatization of Liban Telecom was adopted in the Telecommunications Law 2002, it still didn't take place up to now mostly due to political conflicts. Indeed, the telecommunications markets in MENA region remain less open to competition than elsewhere in the developing world. Up to 2010, in addition to Algeria and Lebanon, many MENA countries still have a monopolist incumbent operator as Djibouti, Egypt, Kuwait, Libya, Qatar, Syria, Tunisia and Yemen. However, some countries succeeded to have two or more fixed operators as Bahrain, Jordan, Morocco, Oman, Saudi Arabia and Sudan.

As a result, the range of competition varies across MENA region. The first group is composed of most Gulf Cooperation Council (GCC) countries. Although not all GCC countries are opened for competition and for foreign investments, they still have the financial resources to invest domestically in the telecom sector. However, the performances in these countries are very different. For example, Kuwait and Yemen have implemented relatively similar reforms, but the levels of performance in both countries are far from comparable in terms of telecom performance: for example, the level of fixed penetration is 20.7 % in Kuwait compared to 4.35% in Yemen in 2010. Moreover, the mobile penetration is 160.8% in Kuwait in 2010 compared to 46.1% in Yemen. The other exception among GCC countries is Oman in the sense that, even if it is a completely closed country to foreign equity share, it has a competitive fixed and mobile market, as well as a partially private incumbent operator. The other group of countries – mostly oil importing countries which contrary to GCC don't have enough domestic capital – is facing external financing constraints and fiscal pressures. North-African countries know moderate level of competition compared to GCC countries, with the exception of Morocco. Lebanon and Libya are crippled with high service tariffs or entry barriers with a state-owned monopoly in the fixed sector and a government owned-duopoly in the mobile sector. However, there are countries in the region that are quite advanced and have ICT levels quite comparable with developed countries, as UAE, Bahrain, Kuwait and Qatar. All these countries are oil producers and are small compared to North African countries as to Egypt.

In this paper, we assess the efficiency conditions for regulatory reforms focusing on the telecom reforms sequence which has been a neglected issue in MENA agenda until now while other countries experiences suggest that it is a crucial issue. We aim to characterize the impact of the reforms sequence on the efficiency of the telecommunication reform specifically structural features that have long-term effects on the provision of backbone infrastructure services as the telecommunications sector. Reaching a consensus on economic reforms for MENA region becomes a pre-requisite for high economic growth in developing MENA countries.

2. The testable propositions

Very few papers (to our knowledge only the studies by Wallsten, 2003 and Fink et al, 2003) explore the impact of reforms sequences in telecom sector, but none of them focuses on MENA countries which might be due to the lack of liable data and time series to implement an adequate empirical analysis. The aim of our analysis is exactly to start filling this gap. Before showing our main results, we now provide a brief sum up of the different hypotheses we investigate in terms of the impact of reforms sequence.

2.1. Regulation-Privatization Sequence

A separate (independent) regulator appears as a way to eliminate inefficiencies occurring in the public operator functioning and regulation through incentive regulation notably. Therefore, it is recommended to have a new regulatory framework prior to privatization, i.e. a reregulation (Guertman, Ménard 2009) . Spiller (1993) confirmed that the prior or simultaneous development of the required institutions is crucial when the incumbent operator is privatized. This would serve to avoid opportunistic behavior and give a guarantee for investors against the risk of expropriation.

Wallsten (2003) tests the effect of the sequence of introducing different reforms; he finds that establishing a regulator prior to the privatization process is correlated with improvements in mobile and fixed-line telephony penetration and incumbent's investments. Consequently, investors pay more for telecom firms in countries that established a regulator prior to the privatization process.

From the above analysis, we derive the following proposition:

Proposition 1. The establishment of a separate regulatory authority prior to the privatization of the incumbent operator helps improving the telecom sector performance (in terms of increasing service penetration, productivity

1 This policy Statement called for the gradual liberalization of the sector including the privatization of the public operator.

and reduction of retail prices which are our three performance indicators).

2.2. Regulation-Competition Sequence

The presence of a separate regulatory authority prior to the introduction of market competition is crucial. An IRA should put in place the rules required to introduce market competition and to efficiently regulate the residual monopoly elements in the sector (Estache et al., 2006) . Such rules concern: licensing conditions, interconnection agreements, technical standards and management of scarce resources in non-discriminatory way. Pro-competitive measures taken in this phase should result largely in higher penetration and lower prices. Consequently, the establishment of a regulatory authority before the entry of new competitors is a priority, in order to oversee the incumbent behavior and to serve as a guarantee and credible commitment for potential new entrants. We thus have the following proposition:

Proposition 2. The establishment of a separate regulatory authority, before the introduction of competition in the market, helps increasing the telecom penetration and helps decreasing prices.

3. The Empirical analysis

We develop an empirical analysis on 17 MENA countries from 1995-2010 to explore the impact of the sequences of different reforms – namely the Regulation-Privatization sequence and the Regulation-Competition sequence – on the telecom sector performance in the voice market for fixed and mobile segments.

3.1. Descriptive statistics

Table 1 below provides basic analysis of the data, allowing for a number of observations. To assess sector performance, we use three dimensions: access rates, productivity and prices. The higher the access rates and the productivity the better the performances. On the contrary, the lower the prices, the higher the performances because it means the higher the competition. The access rate variable is measured by the fixed-line and mobile penetration (the number of fixed and mobile telephone lines in a country per 100 inhabitants, in natural log). The productivity is measured by the number of telephone subscribers in fixed and mobile telephone per employee. To measure the price levels, we use different prices corresponding to different telephone services: first, the monthly subscription for residential telephone service in US$ and second the price of a

Table 1. Summary statistics

	Mean (Standard Deviation, Number of observations)			
Variable	IRA before Privatization =0	IRA before Privatization =1	IRA before Competition =0	IRA before Competition =1
Access indicators				
Fixed per 100 inhabitants	13.14 (9.35, 227)	11.33 (3.59, 45)	13.1 (9.2, 200)	12.13 (7.06, 72)
Mobile per 100 inhabitants	30.12 (42.14, 227)	73.6 (43.27, 45)	22.97 (34.79, 200)	77.15 (47.24, 72)
Productivity indicator				
Total Lines (Fixed and Mobile) per Employee	246.82 (296.61, 179)	935.8 (501.06, 38)	207.61 (229.3, 162)	838.36 (527.5, 55)
Affordability indicators				
Monthly subscription for residential telephone service	5.54 (4.42, 196)	8.11 (3.71, 39)	5.96 (4.64, 166)	5.98 (3.83, 69)
Price of a 3-minute fixed telephone local call (off-peak rate) in US $	0.05 (0.06, 199)	0.12 (0.16, 44)	0.48 (0.05, 174)	0.11 (0.14, 69)
Fixed Basket	7.04 (5.63, 174)	12.02 (7.51, 38)	7.43 (5.95, 144)	9.02 (6.88, 68)
Mobile cellular prepaid- price of 3-minute local call (peak) in US $	0.48 (0.46, 189)	0.52 (0.39, 37)	0.5 (0.49, 170)	0.46 (0.33, 56)
Mobile cellular prepaid- price of 3-minute local call (off-peak) in US $	0.38 (0.43, 176)	0.44 (0.37, 37)	0.39 (0.46, 157)	0.398 (0.31, 56)
Mobile Basket	8.48 (8.88, 174)	9.66 (7.47, 37)	8.7 (9.33, 156)	8.65 (6.37, 55)

Source: Own calculations from ITU database and collected data.

3-minute fixed telephone local call (at peak and off-peak rates) in US$. We also use mobile price of 3-minute local call (at peak and at off-peak rates) in US$. As suggested by the ITU (2012), we construct fixed and mobile price baskets for mobile and fixed-lines[2] using the ITU database.

Looking at the average values of our performances variables shows that an independent regulator prior to the privatization of the incumbent seems to lead to lower fixed access (11,33 fixed lined per 100 inhabitant when there is an IRA prior to the privatization instead of 13,14 when there is no creation of IRA before privatization, i.e.. a decrease of 14%) and higher prices (12,02US$ for the fixed basket when there is an IRA prior to the privatization instead of 7,04US$ when there is no creation of IRA before privatization, i.e. an increase of 70%). However, the creation of an IRA prior to the privatization process leads to higher productivity (935,8 total lines per employees instead of 246,82). Concerning the establishment of an IRA prior to the introduction of competition in the market, it leads also to lower fixed access (13,1 fixed lined per 100 inhabitants when there is an IRA prior to the competition instead of 12,13 when there is no creation of IRA before competition), but to higher mobile access (77,15 instead of 22,15) and higher productivity per Employee (838,36 Total Lines - Fixed and Mobile) when there is an IRA prior to the competition instead of 207,61 Total Lines (Fixed and Mobile) per Employee when there is no IRA prior to the competition. However, the effect of this sequence on prices is not clear-cut. Definitely, descriptive statistics do not necessarily hold for the econometric specification. We therefore conduct an econometric analysis using Instrumental Variable-Two Stages Least Squares (IV-2SLS) estimation while accounting for the endogeneity of reforms and including year dummies.to validate or nuance these previous conclusions.

4. Discussions of the main results

Focusing on the sequence between Regulation and Privatization, we find that this sequence helps improving fixed access since this provides investors with credibility and confidence before entering the market and new investors would ensure they will not be abused by the presence of the State as main shareholder. Thus, the prior establishment of a regulator helps eliminating the negative effect of privatization on the fixed access. This result is important since a regulator serves as a guarantee that the privatized incumbent would not restrict output and reduces the fixed access; a privatized firm has no incentives to offer services if this would not be profitable for it. However, the prior establishment of a regulator leads to an increase in fixed prices, which implies that they would remain high due to privatizing the incumbent operator. This effect has a negative impact on consumers; however it would give incentives for investors to enter the market.

The sequence between Regulation and Competition has a negative significant effect on the fixed access. Therefore, the regulator – assuming that it introduces the rules that would facilitate the operation of new competitors in the market in terms of interconnection agreements and licensing conditions – hinders competition in the market. Moreover, the prior establishment of a regulator reduces telecom productivity. These negative effects could only be explained by the regulatory capture by the incumbent operator. In other words, result seems to suggest that a de jure independent regulator do not necessarily imply that the regulator is also de facto independent. The Appendix below shows that even after IRA establishment since 1995 in different MENA countries, not all of them become better off; only the countries above the line in the access and productivity graphs in figures 1, 2 and 3 (and below the line in the prices graphs in figures 4, 5 and 6) have better performance indicators after IRA establishment. So, the establishment of an independent regulator is not a sufficient condition to reach a better telecom performance. Constraints to the regulator's action limit its independence by increasing the risk of capture, thus exposing its action to external interests. For example, in the absence of sufficient resources (such as budget, jurisdiction or technical expertise), the regulator may depend on the information provided by market operators, that often are state-owned companies whose leaders are appointed by political authorities. A form of political capture may especially emerge when the issues at stake are related to tariffs. In this situation, consumers' opinion deeply affects incumbents, whose main interest is not to lose voters' support and maintain a sort of social order and stability. Thus, this reflects the importance of institutions to set the market rules since the incumbent can represent a high barrier for new entrants by preventing interconnection, even by adopting vertical price squeezing or by capturing the regulator in place. It is obvious that without an IRA, no incumbent operator would allow competition, since it would not be profitable for it; however, its role needs to be more efficient. All in all, the presence of IRA apparently represents a necessary condition for the creation of a favourable regulatory framework, but it is not, in itself, sufficient to actually achieve first best outcomes. The reason lies in that the effectiveness

2 The landline price basket includes monthly subscription fees in addition to the rate for 30 three-minute local calls to the same network (15 minutes at peak rate and 15 at off-peak rate). As in ITU (2012), the mobile basket is equivalent to 50.87 minutes, we calculate it as 10* (mobile price of 3-minute local call (at peak) + mobile price of 3-minute local call (at off-peak)) due to the lack of some prices indicators. The monthly mobile price basket includes the price of 30 outgoing calls (on-net, off-net and to a fixed line, for peak, off-peak and weekend periods), plus 100 SMS messages (50 on-net and 50 off-net).

of regulation depends also on the characteristics of the environment in which IRAs operate, notably on the set of political and social institutions of the country. Indeed, factors such as the executive-legislative-judiciary relations, the bureaucratic system, the level of political stability, the degree of conflict among stakeholders, the arbitrariness or the scale of corruption have a significant influence on the regulatory performance by determining the receptivity of the environment to regulation activities. In turn, this has predictably a strong impact on private investments. To avoid mistakes in our estimations, we do consider such political and institutional differences across MENA countries in our empirical investigation.

Finally we notice that this sequence increases the fixed prices, due to tariff rebalancing system. This might be a way to attract investors since this would be profitable for them to have higher prices and to avoid any uncompetitive behavior by excessively reducing fixed prices by the incumbent operator – as a way to deter entry in the fixed market.

5. Conclusion

This paper is a first attempt to empirically test the effect of sequences in telecom reform on sector performances in MENA countries, as a group of developing countries that can be compared with each other because of the existing political, geographical and historical similarities.

It is noteworthy that the establishment of IRA appears more valuable when we test for its sequence; the prior presence of IRA before other reforms, such as privatization and competition, matters. Such results are of great importance for policy makers in MENA countries, since it implies that setting rules for the regulatory framework is a priority; and the main concern for policy makers should be the guarantee of its credibility and effectiveness. New rules and stronger institutions are needed to ensure effective telecom market, effective competition in fixed segments and better monitoring for newly privatized incumbents.

References

1. Hakim, S., & Neaime, S. (2014). The demand elasticity of mobile telephones in the Middle East and North Africa. Research in International Business and Finance, 32, 1-14.
2. Glachant, J., Dubois, U., & Perez, Y. (2008). "Deregulating with no regulator: is Germany electricity transmission regime institutionally correct?", Energy Policy.
3. Elena, I., Shantayanan, D., Burger, M., Damir, C. & Rouis, M. 2013. Middle East and North Africa - economic developments and prospects : investing in turbulent times. Washington DC ; World Bank. http://documents.worldbank.org/curated/en/2013/10/18371656/middle-east-north-africa-economic-developments-prospects-investing-turbulent-times
4. Cankorel, T., & Aryani, L. (2009). Spectrum of Regulations: Mobile Telecom Regulation in the Middle East and North Africa, A. Convergence, 5, 165.
5. Wallsten, Scott. 2003. "Of Carts and Horses: Regulation and Privatization in Telecommunications Reforms." The Journal of Policy Reform 6 (4) (December): 217–231. Fink, Carsten, Aaditya Mattoo, and Randeep Rathindran. 2003. "An Assessment of Telecommunications Reform in Developing Countries." Information Economics and Policy 15 (4): 443–466
6. For more details, see Ahmed Ezzat, R., Cambini, C. and Staropoli, C. (2015). Do reforms sequences matter for telecom sector performance? Evidence from MENA countries.
7. Ghertman, M., Ménard, C. 2009 Regulation, Deregulation and Reregulation: Institutional Perspectives
8. Spiller, Pablo T. 1993. "Institutions and Regulatory Commitment in Utilities' Privatization." Industrial and Corporate Change 2 (1): 387– 450
9. Estache, Antonio, Ana Goicoechea, and Marco Manacorda. 2006. "Telecommunications Performance, Reforms, and Governance." World Bank Policy Research Working Paper (3822).

Appendix. The effect of IRA establishment on telecom performance

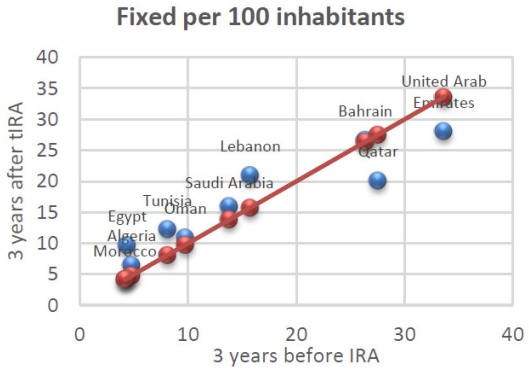

Figure 1. The effect of an independent regulator on the fixed penetration three years before its establishment compared to three years after its establishment.

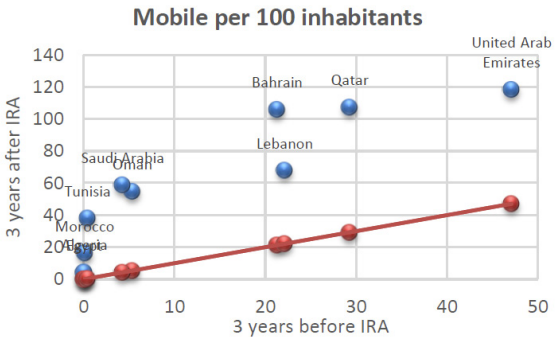

Figure 2. The effect of an independent regulator on the mobile penetration.

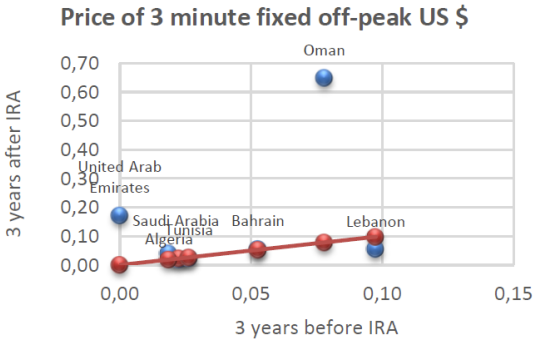

Figure 5. The effect of an independent regulator on the price of 3 minute fixed call three years.

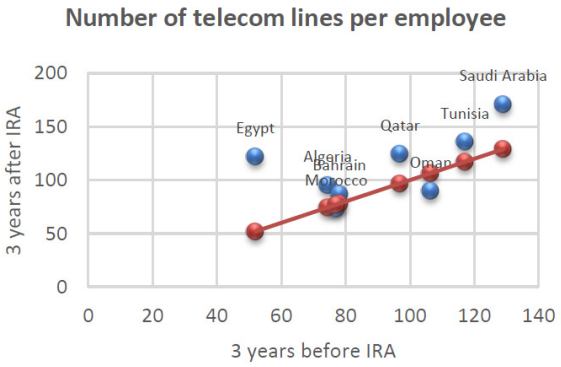

Figure 3. The effect of an independent regulator on the productivity measure.

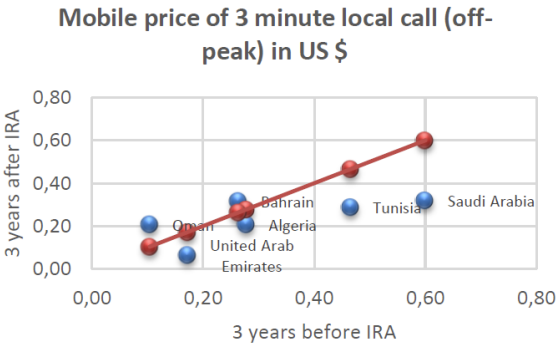

Figure 6. The effect of an independent regulator on the price of 3 minute mobile call.

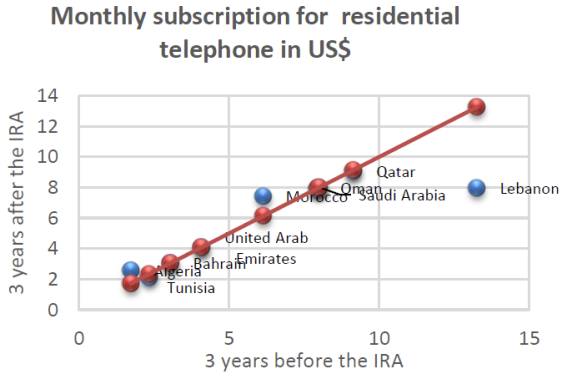

Figure 4. The effect of an independent regulator on the fixed monthly subscription.

networkindustries quarterly

Network Industries Quarterly, Vol. 17, issue 4, 2015 (December) "Local utilities and public services in Europe: challenges and opportunities"

Starting from the '90s, public utilities have experienced radical changes in all European countries. Corporatisation and privatisation reshaped relationships in corporate governance, while the liberalisation of the energy sector and of network industries in general radically changed the rules of the game for both economic and political actors at different levels. These transformations impinged on multiple territorial levels. Namely, the EU is interested in increasing the level of competitiveness in public service production and provision, while national governments underwent major transformations towards both a regulatory type of State and multi-level governance. In this context, regional and local governments get more and more involved in policy implementation and management of contracts in services such as water, waste, transport, electricity and gas distribution. As a result, the scenario for local public services is multifaceted, depending on the country and the sector, leaving many open questions for firms, regulators and local contractors. Despite the relevance of the local facet of these transformations, the local governance of these services has not yet been studied in a comparative way and with the goal of distinguishing similarities and differences across countries and sectors. This call for papers aims at filling this gap, searching for academic contributions able to explore the main challenges and opportunities for present local utilities and particularly linked to:

• The prevalent management option in use in the service (direct management, affirmage, service contracts);
• The definition of the territorial scale for the provision of services at the local level;
• The challenges of local authorities and the relationship with national regulatory agencies in the different sectors;
• The different strategies of M&A and internationalisation of local utilities for market restructuring and the relation with national champions;
• The challenges related to technology and infrastructures in the different sectors;
• The new relationship with local governments, considering both the management of contracts and the corporate governance of mixed-owned firms;
• The accountability issues in local public service management.

We welcome proposals in the form of a short abstract of max 200 words that touch these and other issues related to local public utilities, either with a case study or a comparative approach and grounded on empirical research. The deadline for abstracts is September 30th, 2015. The final paper should not exceed 1.700 words length (all included). A preliminary draft is expected by November 26th, 2015. If you are interested to contribute, please send an email to the editors of this special issue on "Local utilities and public services in Europe: challenges and opportunities", Ms Maria Tullia Galanti (maria.galanti@unimi.it) and Mr Marco Di Giulio (marco.digiulio3@unibo.it), with a cc to Prof. Matthias Finger (FSR.Transport@eui.eu).

The Network Industries Quarterly carries an ISBN number and is published by Ecole Polytechnique Fédérale Lausanne (EPFL) and the Florence School of Regulation (European University Institute). Published four times a year and distributes to approx. 6000 interested subscribers worldwide, the NIQ is included in Cadmus, the EUI's Research Repository. You can find the latest issues of the NIQ here:

- Vol 17 - no 2 - 2015 – Urban Energy Transition
- Vol 17 - no 1 - 2015 – Network Industries in Eurasia

UTILITIES POLICY JOURNAL - CALL FOR PAPERS

FLORENCE SCHOOL SPECIAL ISSUE ON REGULATING INFRASTRUCTURES

(OFFICIAL CALL AVAILABLE ON THE PUBLISHER'S WEBSITE)

ABSTRACT

The de- and re-regulation of the different network industries is an ongoing process at the global level. As this process unfolds, ever new phenomena emerge, which generally call for more, rather than less regulatory intervention. Yet, the question about the right mixture between market, economic, technical and social regulation remains widely open in all the network industries.

The question becomes even more challenging when looking at infrastructure development in the different regions of the world. While most of the European countries have a long lasting story of national regulation and have then started to put considerable effort in harmonising their regulation at the EU level, outside of the EU, regulation of different network industries has followed different paths.

This Florence School special issue gathers contributions to the 4th Florence Conference on the Regulation of Infrastructures and aims at taking stock of the major challenges infrastructure regulation is currently facing all over the world, with a special focus also on emerging countries. Due to impossibility for many to participate in the Conference, papers that have not been presented at the Conference will also be considered for publication.

TOPICS COVERED

Areas of interest include, but are not limited to:

• Issues relevant in the main infrastructure sectors, notably telecommunications, postal services, electricity, gas, railways, air transport, urban public transport, as well as water distribution and sanitation;

• Issues that are tackled from various disciplinary approaches, notably engineering, economics, law and political science; interdisciplinary approaches are particularly encouraged;

• Case studies that are linking an academic approach to practical relevance; policy relevant research papers are particularly welcomed;

• We are especially looking for papers that link technology and institutions in developing and emerging countries.

GUEST EDITOR

Prof. Matthias Finger

École polytechnique fédérale de Lausanne – Chair Management of Network Industries; European University Institute – Transport Area of the Florence School of Regulation

NOTES FOR PROSPECTIVE AUTHORS

Submission of an article implies that such work has not been previously published nor is currently under consideration for publication elsewhere, and that its publication is approved by all authors. All papers will be peer-reviewed. A guide for authors, sample copies and other relevant information for submitting papers are available on the "Author Guidelines" page.

SUBMISSION GUIDELINES

All papers must be submitted through the Utilities Policy website: http://ees.elsevier.com/juip/

When submitting the manuscript, please select "SI: Regulating Infrastructures" when you reach the "Article Type" step.

Please inform the Guest Editor about your submission to the following contacts: Special Issue's Guest Editor, Prof Matthias Finger, at Matthias.Finger@epfl.ch, and Florence School of Regulation's Research Associate, Ms Nadia Bert, at FSR.Transport@eui.eu.

IMPORTANT DATES

- First Submission Date: 15 October 2015
- Notification of acceptance and comments by Guest Editor: 15 March 2016
- Revision process and notification of full paper acceptance due: 15 August 2016
- Publication of the accepted paper: November 2016

The Transport Area of the Florence School of Regulation

The Florence School of Regulation (FSR) has been created in 2004 as a partnership between the European University Institute (EUI) and the Council of the European Energy Regulators (CEER). Since then, the Florence School of Regulation has expanded from Energy regulation to Telecommunications and Media (2009), Transport (2010) and Water (2014).

The Transport Area of the Florence School of Regulation (FSR Transport) is concerned with the regulation of all the transport modes and transport markets (including the relationship among them). It currently focuses on regulation and regulatory policies in railways, air transport, urban public transport, intermodal transport, as well as postal and delivery services.

The aim of FSR Transport is:

- to freely discuss topics of concern to regulated firms, regulators and the European Commission by way of stakeholder workshops;
- to involve all the relevant stakeholders in such discussions; and
- to actively contribute to the evolution of European regulatory policy by way of research.

The core activity of FSR Transport is the organization of policy events, where representatives of the European Commission, regulatory authorities, operators, other stakeholders, as well as academics in the field meet to shape regulatory policy in matters of European transport.

The results of FSR Transport's activities are disseminated by way of policy briefs, working papers and academic publications. All FSR Transport materials are open source and available on the FSR Transport webpage, as they aim to involve professors, young academics and practitioners to become part of a unique open platform for applied research.

To learn more visit our website: www.florence-school.eu or contact us at FSR.Transport@eui.eu.

Latest event:

4th Conference on the Regulation of Infrastructures

The de- and re-regulation of the different network industries is an ongoing process at the global level. As this process unfolds, ever new phenomena emerge, which generally call for more, rather than less regulatory intervention. Yet, the question about the right mixture between market, economic, technical and social regulation remains wide open in all the network industries.

Continuing the successful format, the 4th Conference on the Regulation of Infrastructures took place on Friday, 12th June and brought together all research areas of the Florence School of Regulation to discuss current challenges in the regulation of the Infrastructure Industries.

FSR-Transport events Fall 2015:

Date	Title
18 September 2015	7th Florence Air Forum
19 October 2015	6th Florence Urban Forum
27 November 2015	11th Florence Rail Forum

For more information about our activities please contact: FSR.Transport@eui.eu.